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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/712,690	11/13/2003	Ling Chen	006766/CPI/L/B/PJS	9100
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PATTERSON & SHERIDAN, LLP 3040 POST OAK BOULEVARD, SUITE 1500 HOUSTON, TX 77056			ZERVIGON, RUDY	
			ART UNIT	PAPER NUMBER

1763

DATE MAILED: 01/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/712,690

Applicant(s)

CHEN ET AL.

Examiner

Rudy Zervigon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4,7,8,11-13,15 and 21-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4,7,8,11-13,15 and 21-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12/5/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “second gas distribution assembly” must be shown or the feature canceled from the claims. No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or

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improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1-4, 7, 8, 11-13, 15, and 21-30 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8, and 10-16 of copending Application No. 10/281,079 in view of Carducci; James D et al. (US 6,716,302 B2). Although the conflicting claims are not identical, they are not patentably distinct from each other because, for example, the claims of the present invention claims an "insulating plate" whereas the claims of Application No. 10/281,079 do not claim an "insulating plate".

Carducci teaches a gas injector (350a-c; Figures 7a-c) for a processing chamber (112; Figure 2) including a thermal insulating plate (134; Figures 7a-c; column 15, lines 1-10).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Carducci's thermal insulating plate to the apparatus claims of the present invention.

Motivation to add Carducci's thermal insulating plate to the apparatus claims of the present invention, is for preventing film depositions on the chamber surfaces during processing as taught by Carducci (column 12; lines 28-45).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

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3. Claims 1-4, 7, 8, 11-13, 15, and 21-30 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-51 of copending Application No. 10/894,774 in view of Carducci; James D et al. (US 6,716,302 B2). Although the conflicting claims are not identical, they are not patentably distinct from each other because, for example, the claims of the present invention claims an “insulating plate” whereas the claims of Application No. 10/894,774 do not claim an “insulating plate”. .

Carducci teaches a gas injector (350a-c; Figures 7a-c) for a processing chamber (112; Figure 2) including a thermal insulating plate (134; Figures 7a-c; column 15, lines 1-10).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Carducci’s thermal insulating plate to the apparatus claims of the present invention.

Motivation to add Carducci’s thermal insulating plate to the apparatus claims of the present invention, is for preventing film depositions on the chamber surfaces during processing as taught by Carducci (column 12; lines 28-45).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

4. Claims 1-4, 7, 8, 11-13, 15, and 21-30 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 11-35 of copending Application No. 10/268,438 in view of Carducci; James D et al. (US 6,716,302 B2). Although the conflicting claims are not identical, they are not patentably distinct from each other because, for example, the claims of the present invention claims an “insulating plate” whereas the claims of Application No. 10/268,438 do not claim an “insulating plate”. .

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Carducci teaches a gas injector (350a-c; Figures 7a-c) for a processing chamber (112; Figure 2) including a thermal insulating plate (134; Figures 7a-c; column 15, lines 1-10).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Carducci's thermal insulating plate to the apparatus claims of the present invention.

Motivation to add Carducci's thermal insulating plate to the apparatus claims of the present invention, is for preventing film depositions on the chamber surfaces during processing as taught by Carducci (column 12; lines 28-45).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

5. Claims 1-4, 7, 8, 11-13, 15, and 21-30 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 10-14, 24-27, 42-48, 61-69, 83-88, and 95-100 of copending Application No. 10/241,373 in view of Carducci; James D et al. (US 6,716,302 B2). Although the conflicting claims are not identical, they are not patentably distinct from each other because, for example, the claims of the present invention claims an "insulating plate" whereas the claims of Application No. 10/241,373 do not claim an "insulating plate".

Carducci teaches a gas injector (350a-c; Figures 7a-c) for a processing chamber (112; Figure 2) including a thermal insulating plate (134; Figures 7a-c; column 15, lines 1-10).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Carducci's thermal insulating plate to the apparatus claims of the present invention.

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Motivation to add Carducci's thermal insulating plate to the apparatus claims of the present invention, is for preventing film depositions on the chamber surfaces during processing as taught by Carducci (column 12; lines 28-45).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

6. Claims 1-4, 7, 8, 11-13, 15, and 21-30 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-21 of U.S. Patent No. 6,916,398 in view of Carducci; James D et al. (US 6,716,302 B2). Although the conflicting claims are not identical, they are not patentably distinct from each other because, for example, the claims of the present invention claims an "insulating plate" whereas the claims of U.S. Patent No. 6,916,398 do not claim an "insulating plate".

Carducci teaches a gas injector (350a-c; Figures 7a-c) for a processing chamber (112; Figure 2) including a thermal insulating plate (134; Figures 7a-c; column 15, lines 1-10).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Carducci's thermal insulating plate to the apparatus claims of the present invention.

Motivation to add Carducci's thermal insulating plate to the apparatus claims of the present invention, is for preventing film depositions on the chamber surfaces during processing as taught by Carducci (column 12; lines 28-45).

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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8. Claims 1-4, 7, 8, 11-13, 15, and 21-30 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Applicant claims “a second gas distribution assembly”. There is no support for a “second gas distribution assembly” in the specification.

Claim Rejections - 35 USC § 103

9. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

10. Claims 1-4, 7, 8, 11-13, 15, and 21-30 are rejected under 35 U.S.C. 103(a) as being obvious over Chen; Ling et al. (US 6,916,398 B2).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention “by another”; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in

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accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2). Chen teaches an apparatus (Figure 1; column 3, line 62 - column 4, line 54) capable of performing multiple deposition (column 2, lines 5-17) processes, comprising: a chamber body (200; Figure 1; column 3, line 62 - column 4, line 54); a lid (232; Figure 1; column 3, line 62 - column 4, line 54) assembly attached to the chamber body (200; Figure 1; column 3, line 62 - column 4, line 54); a first gas distribution assembly (230; Figure 1; column 3, line 62 - column 4, line 54) coupled to the lid (232; Figure 1; column 3, line 62 - column 4, line 54) assembly and configured for a cyclical layer desposition process comprising: a gas conduit (250A/B, 404; Figure 1; column 3, line 62 - column 4, line 54 = compare to Applicant's gas conduits 250a,b; Figure 2) positioned on and extending through the lid (232; Figure 1; column 3, line 62 - column 4, line 54) assembly and having an expanding channel (404; Figure 3; column 3, line 62 - column 4, line 54) in fluid communication with the chamber body (200; Figure 1; column 3, line 62 - column 4, line 54); a first gas inlet (236A; Figure 3; column 6, lines 14-38) and a second gas inlet (236B; Figure 3; column 6, lines 14-38) positioned on the gas conduit (250A/B, 404; Figure 1; column 3, line 62 - column 4, line 54 = compare to Applicant's gas conduits 250a,b; Figure 2) to form a circular gas flow pattern (Figure 2) within the gas conduit (250A/B, 404; Figure 1; column 3, line 62 - column 4, line 54 = compare to Applicant's gas conduits 250a,b; Figure 2); and a first high speed actuating valve (242A, 252A; Figure 1; column 3, line 62 - column 4, line 54) coupled to the first gas inlet (236A; Figure 3; column 6, lines 14-38), a second high speed actuating valve (242B, 252B; Figure 1; column 3, line 62 - column 4, line 54) coupled to the second gas inlet (236B; Figure 3;

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column 6, lines 14-38) and an annular mixing channel (Volume 234; Figure 3; column 6, lines 14-38) in fluid communication with the gas conduit (250A/B, 404; Figure 1; column 3, line 62 - column 4, line 54 = compare to Applicant's gas conduits 250a,b; Figure 2), and adapted to deliver a continuous flow of one or more compounds into the gas conduit (250A/B, 404; Figure 1; column 3, line 62 - column 4, line 54 = compare to Applicant's gas conduits 250a,b; Figure 2) - claim 1

Applicant's claim requirement of "and configured for a cyclical layer desposition process", and "and the first and second high speed actuating valves are configured to sequentially pulse a first gas and a second gas during the cyclical layer deposition process:" are claim requirements of intended use of the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02). When the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).

Chen further teaches:

- i. The apparatus (Figure 1; column 3, line 62 - column 4, line 54) of claim 1, wherein the gas conduit (250A/B, 404; Figure 1; column 3, line 62 - column 4, line 54 = compare to

Applicant's gas conduits 250a,b; Figure 2) comprises a gradually increasing inner diameter (column 6; lines 33-37), as claimed by claim 2

- ii. The apparatus (Figure 1; column 3, line 62 - column 4, line 54) of claim 1, wherein the gas conduit (250A/B, 404; Figure 1; column 3, line 62 - column 4, line 54 = compare to Applicant's gas conduits 250a,b; Figure 2) has a frusto-conical shape (column 6; lines 33-37), as claimed by claim 3 – It is the Examiner's position that if a gas conduit has "a gradually increasing inner diameter" , as claimed by claim 2, then it must be "a frusto-conical shape".
- iii. The apparatus (Figure 1; column 3, line 62 - column 4, line 54) of claim 1, wherein the annular mixing channel (Volume 234; Figure 3; column 6, lines 14-38) is in fluid communication with the gas conduit (250A/B, 404; Figure 1; column 3, line 62 - column 4, line 54 = compare to Applicant's gas conduits 250a,b; Figure 2) via one or more passageways (originating from 402A,B; Figure 3) (outlets of 236A/B; Figure 3; column 6, lines 14-38), as claimed by claim 4
- iv. An apparatus (Figure 1; column 3, line 62 - column 4, line 54) capable of performing multiple deposition (column 2, lines 5-17) processes, comprising: a chamber body (200; Figure 1; column 3, line 62 - column 4, line 54); a lid (232; Figure 1; column 3, line 62 - column 4, line 54) assembly attached to the chamber body (200; Figure 1; column 3, line 62 - column 4, line 54); a first gas distribution assembly (230; Figure 1; column 3, line 62 - column 4, line 54) coupled to the lid (232; Figure 1; column 3, line 62 - column 4, line 54) assembly and configured for a cyclical layer deposition process, comprising: a gas conduit (250A/B, 404; Figure 1; column 3, line 62 - column 4, line 54 = compare to

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Applicant's gas conduits 250a,b; Figure 2) in fluid communication with the chamber body (200; Figure 1; column 3, line 62 - column 4, line 54) positioned on and extending through the lid (232; Figure 1; column 3, line 62 - column 4, line 54) assembly; at least two flow paths (302A/B; Figure 3; column 6, lines 14-38) in fluid communication with the gas conduit (250A/B, 404; Figure 1; column 3, line 62 - column 4, line 54 = compare to Applicant's gas conduits 250a,b; Figure 2), wherein each isolated flow path is coupled to one or more high speed actuating valves (242A/B, 252A/B; Figure 1; column 3, line 62 - column 4, line 54) for enabling the cyclical layer deposition process (see above) comprising: an annular mixing channel (Volume 234; Figure 3; column 6, lines 14-38) concentrically disposed about the gas conduit (250A/B, 404; Figure 1; column 3, line 62 - column 4, line 54 = compare to Applicant's gas conduits 250a,b; Figure 2) and in fluid communication with the gas conduit (250A/B, 404; Figure 1; column 3, line 62 - column 4, line 54 = compare to Applicant's gas conduits 250a,b; Figure 2) via one or more passageways (originating from 402A,B; Figure 3) (outlets of 236A/B; Figure 3; column 6, lines 14-38), at least one nozzle (originating from 402A,B; Figure 3 - Applicant equates "nozzles" with "passageways" - see Applicant's specification section [0047]) connected to each of the one or more passageways (originating from 402A,B; Figure 3) and positioned to eject a gas into the gas conduit (250A/B, 404; Figure 1; column 3, line 62 - column 4, line 54 = compare to Applicant's gas conduits 250a,b; Figure 2); and a first gas inlet (236A; Figure 3; column 6, lines 14-38) positioned on an inner wall of the annular mixing channel to form a circular gas flow pattern for the gas within the annular mixing channel, as claimed by claim 7 - Applicant's claimed limitation of "by a pressure

differential created within the gas distribution assembly” is a claim requirement of intended use. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02). Further, when the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).

- v. The apparatus (Figure 1; column 3, line 62 - column 4, line 54) of claim 7, wherein the gas conduit (250A/B, 404; Figure 1; column 3, line 62 - column 4, line 54 = compare to Applicant's gas conduits 250a,b; Figure 2) further comprises a conical concave lower surface (See Figure 1, no label) to help evenly distribute gases within the chamber body (200; Figure 1; column 3, line 62 - column 4, line 54), as claimed by claim 8
- vi. The apparatus (Figure 1; column 3, line 62 - column 4, line 54) of claim 8, wherein the at least one nozzle (originating from 402A,B; Figure 3 - Applicant equates “nozzles” with “passageways” - see Applicant's specification section [0047]) is radially positioned or substantially radially positioned in relation to the gas conduit (250A/B, 404; Figure 1;

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- column 3, line 62 - column 4, line 54 = compare to Applicant's gas conduits 250a,b; Figure 2), as claimed by claim 11
- vii. The apparatus (Figure 1; column 3, line 62 - column 4, line 54) of claim 8, wherein the at least one nozzle (originating from 402A,B; Figure 3 - Applicant equates "nozzles" with "passageways" - see Applicant's specification section [0047]) is tangentially positioned or substantially tangentially positioned in relation to the gas conduit (250A/B, 404; Figure 1; column 3, line 62 - column 4, line 54 = compare to Applicant's gas conduits 250a,b; Figure 2), as claimed by claim 12
- viii. The apparatus (Figure 1; column 3, line 62 - column 4, line 54) of claim 7, further comprising a second gas inlet (236B; Figure 3; column 6, lines 14-38) positioned on an inner wall of the anular mixing channel (Volume 234; Figure 3; column 6, lines 14-38), as claimed by claim 13
- ix. The apparatus (Figure 1; column 3, line 62 - column 4, line 54) of claim 7, wherein the gas conduit (250A/B, 404; Figure 1; column 3, line 62 - column 4, line 54 = compare to Applicant's gas conduits 250a,b; Figure 2) comprises a gradually increasing inner diameter (column 6; lines 33-37) from inlet to outlet, as claimed by claim 15
- x. The apparatus (Figure 1; column 3, line 62 - column 4, line 54) of claim 1, wherein the circular gas flow pattern (Figure 2) is selected from the group consisting of a vortex pattern, a spiral pattern and a derivative thereof, as claimed by claim 21
- xi. The apparatus (Figure 1; column 3, line 62 - column 4, line 54) of claim 13, wherein the second gas inlet (236B; Figure 3; column 6, lines 14-38) is positioned with the first gas

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inlet (236A; Figure 3; column 6, lines 14-38) to for the circular gas flow pattern (Figure 2), as claimed by claim 22

- xii. The apparatus (Figure 1; column 3, line 62 - column 4, line 54) of claim 22. wherein the circular gas flow pattern (Figure 2) is selected from the group consisting of a vortex pattern, a spiral pattern and a derivative thereof, as claimed by claim 23
- xiii. An apparatus (Figure 1; column 3, line 62 - column 4, line 54) for performing multiple deposition processes, comprising: a substrate support (212; Figure 1; column 3, line 62 - column 4, line 54) having a substrate receiving surface and contained within a chamber body (200; Figure 1; column 3, line 62 - column 4, line 54); a lid (232; Figure 1; column 3, line 62 - column 4, line 54) assembly attached to the chamber body (200; Figure 1; column 3, line 62 - column 4, line 54); a process gas channel (404; Figure 3; column 3, line 62 - column 4, line 54) contained within a gas conduit (250A/B, 404; Figure 1; column 3, line 62 - column 4, line 54 = compare to Applicant's gas conduits 250a,b; Figure 2) positioned on and extending through the lid (232; Figure 1; column 3, line 62 - column 4, line 54) assembly and having an expanding channel in fluid communication with the substrate support (212; Figure 1; column 3, line 62 - column 4, line 54); a first gas distribution assembly (230; Figure 1; column 3, line 62 - column 4, line 54) coupled to the lid (232; Figure 1; column 3, line 62 - column 4, line 54) assembly and configured for a cyclical layer deposition process, comprising: a first gas inlet (236A; Figure 3; column 6, lines 14-38) and a second gas inlet (236B; Figure 3; column 6, lines 14-38) positioned on the gas conduit (250A/B, 404; Figure 1; column 3, line 62 - column 4, line 54 = compare to Applicant's gas conduits 250a,b; Figure 2) to form a circular gas flow

pattern (Figure 2) within the process gas channel (404; Figure 3; column 3, line 62 - column 4, line 54); and a first high speed actuating valve (242A, 252A; Figure 1; column 3, line 62 - column 4, line 54) coupled to the first gas inlet (236A; Figure 3; column 6, lines 14-38), a second high speed actuating valve (242B, 252B; Figure 1; column 3, line 62 - column 4, line 54) coupled to the second gas inlet (236B; Figure 3; column 6, lines 14-38); the first and second high speed actuating valves are configured to enable sequential pulses of gases with a pulse time of about 1 second or less (column 5; lines 13-33) during the cyclical layer deposition process comprising: an annular mixing channel (Volume 234; Figure 3; column 6, lines 14-38) in fluid communication with the substrate support (212; Figure 1; column 3, line 62 - column 4, line 54) and adapted to deliver a continuous flow of one or more compounds into the process gas channel (404; Figure 3; column 3, line 62 - column 4, line 54) during the chemical vapor deposition process – claim 24

- xiv. The apparatus (Figure 1; column 3, line 62 - column 4, line 54) of claim 24, wherein the pulse time is about 0.1 seconds or less (column 5; lines 13-33), as claimed by claim 25
- xv. The apparatus (Figure 1; column 3, line 62 - column 4, line 54) of claim 25, wherein the circular gas flow pattern (Figure 2) is selected from the group consisting of a vortex pattern, a spiral pattern and a derivative thereof, as claimed by claim 26
- xvi. The apparatus (Figure 1; column 3, line 62 - column 4, line 54) of claim 24, wherein the annular mixing channel (Volume 234; Figure 3; column 6, lines 14-38) is in fluid communication with the gas conduit (250A/B, 404; Figure 1; column 3, line 62 - column 4, line 54 = compare to Applicant's gas conduits 250a,b; Figure 2) by a plurality of

passageways (originating from 402A,B; Figure 3) formed through a surface of the gas conduit (250A/B, 404; Figure 1; column 3, line 62 - column 4, line 54 = compare to Applicant's gas conduits 250a,b; Figure 2), as claimed by claim 27

- xvii. The apparatus (Figure 1; column 3, line 62 - column 4, line 54) of claim 27, wherein each passageway of the plurality of passageways (originating from 402A,B; Figure 3) contains a nozzle (originating from 402A,B; Figure 3 - Applicant equates "nozzles" with "passageways" - see Applicant's specification section [0047]) positioned to eject the one or more compounds into the process gas channel (404; Figure 3; column 3, line 62 - column 4, line 54), as claimed by claim 28
- xviii. The apparatus (Figure 1; column 3, line 62 - column 4, line 54) of claim 28, wherein the nozzle (originating from 402A,B; Figure 3 - Applicant equates "nozzles" with "passageways" - see Applicant's specification section [0047]) is radially positioned or substantially radially (Figure 2) positioned in relation to the gas conduit (250A/B, 404; Figure 1; column 3, line 62 - column 4, line 54 = compare to Applicant's gas conduits 250a,b; Figure 2), as claimed by claim 29
- xix. The apparatus (Figure 1; column 3, line 62 - column 4, line 54) of claim 28, wherein the nozzle (originating from 402A,B; Figure 3 - Applicant equates "nozzles" with "passageways" - see Applicant's specification section [0047]) is tangentially positioned or substantially tangentially positioned (Figure 2) in relation to the gas conduit (250A/B, 404; Figure 1; column 3, line 62 - column 4, line 54 = compare to Applicant's gas conduits 250a,b; Figure 2), as claimed by claim 30

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Chen does not teach a second gas distribution assembly coupled to the lid (232; Figure 1; column 3, line 62 - column 4, line 54), as claimed by claim 1, 7, and 24.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add plural of Chen's gas distribution assembly (230; Figure 1; column 3, line 62 - column 4, line 54).

Motivation to add plural of Chen's gas distribution assembly (230; Figure 1; column 3, line 62 - column 4, line 54) is for injecting plural processes gases. It is well established that the duplication of parts is obvious (*In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960) MPEP 2144.04).

Response to Arguments

11. Applicant's arguments with respect to claims 1-4, 7, 8, 11-13, 15, and 21-30 have been considered but are moot in view of the new grounds of rejection.

Conclusion

12. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272.1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official fax phone number for the 1763 art unit is (703) 872-9306. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272-1435.



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